1 Centrality.

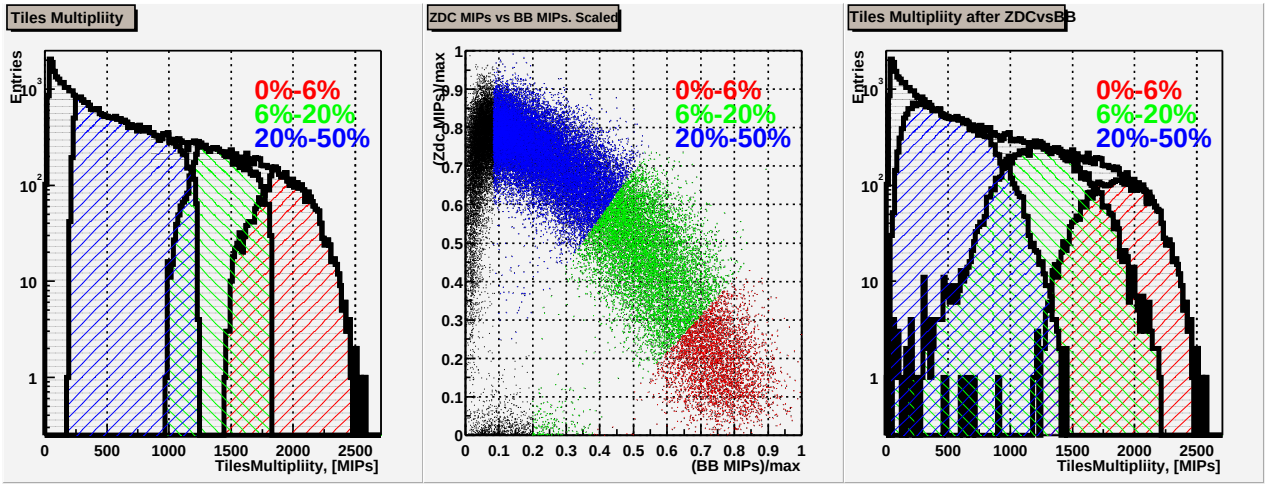

Figure 1: Centrality definition. $|z_o| \leq 30cm$.

2 Raw Data. Big Tubes

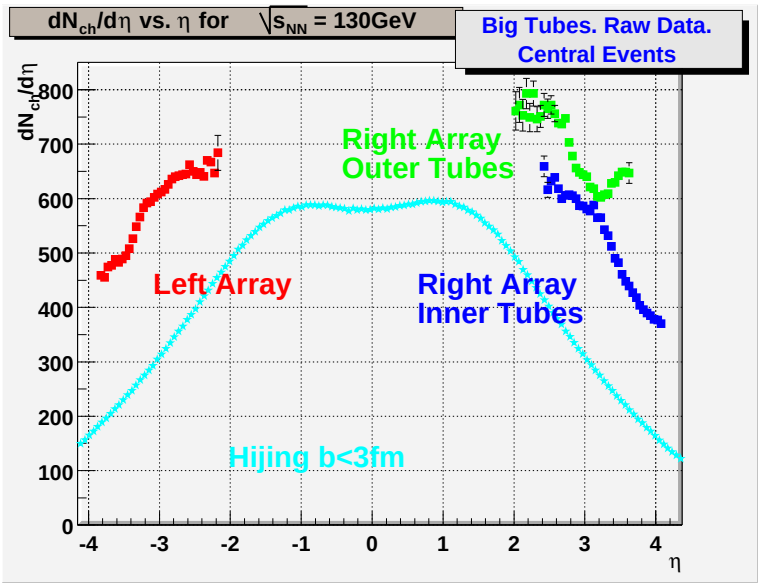

Figure 2: $dN_{ch}/d\eta$ *vs.* η. Raw Data. Big Tubes. $|z_o| \leq 150cm$.

3 Background subtraction

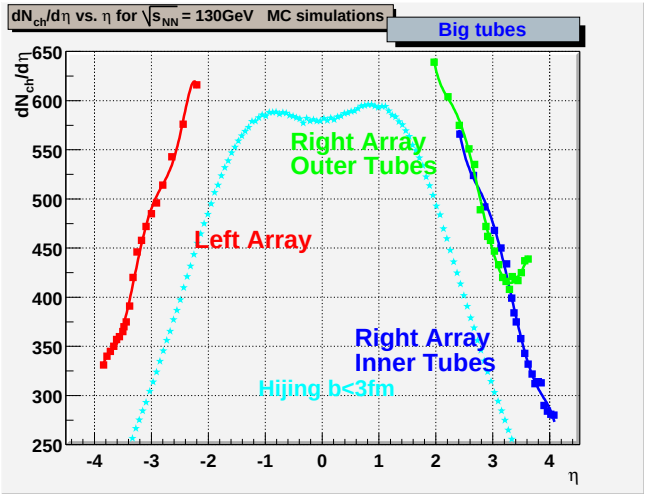

Figure 3: $dN_{ch}/d\eta$ *vs.* η. GEANT Raw Data. Big Tubes. $|z_o| \leq 150cm$.

$$k = \frac{(dN_{ch}/d\eta)_{HIJING;\ No\ Background}}{(dN_{ch}/d\eta)_{HIJING;\ With\ the\ Background}}$$

4 Big Tubes. $dN_{ch}/d\eta$

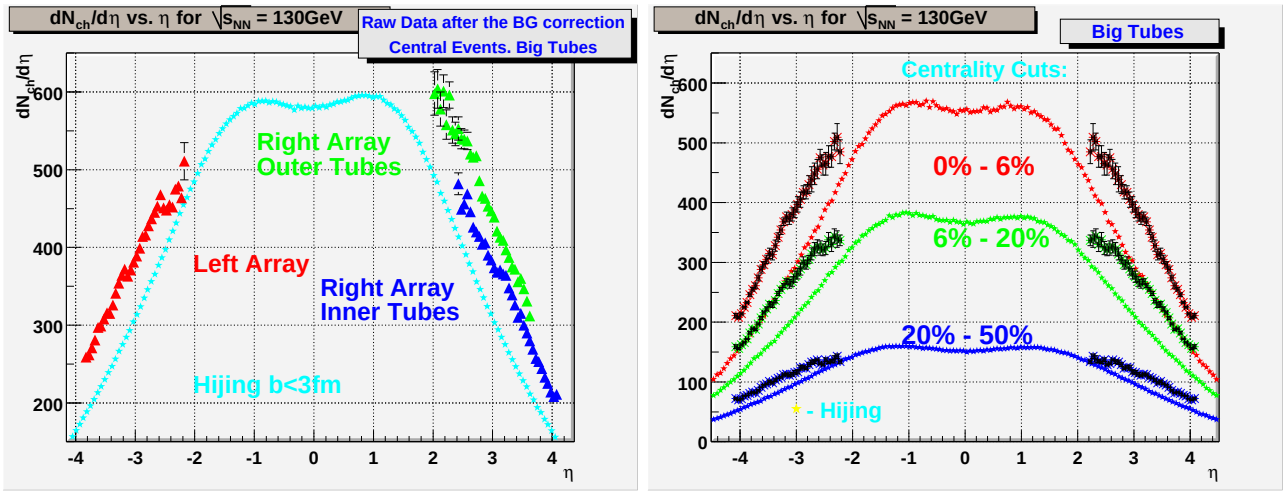

Figure 4: $dN_{ch}/d\eta$ *vs.* η. Big Tubes. $|z_o| \leq 150cm$.

5 Small Tubes

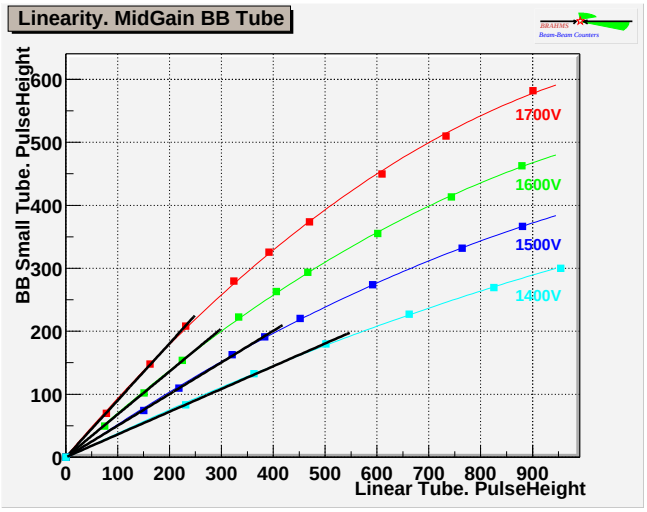

Figure 5: Nonlinearity in Small Tubes.

5.1 "Empty Boxes"

$$P(n) = \frac{\lambda^n e^{-\lambda}}{n!}, \qquad \frac{\#\ of\ No\ hits}{Total\ Number\ of\ Events} = e^{-\lambda}$$

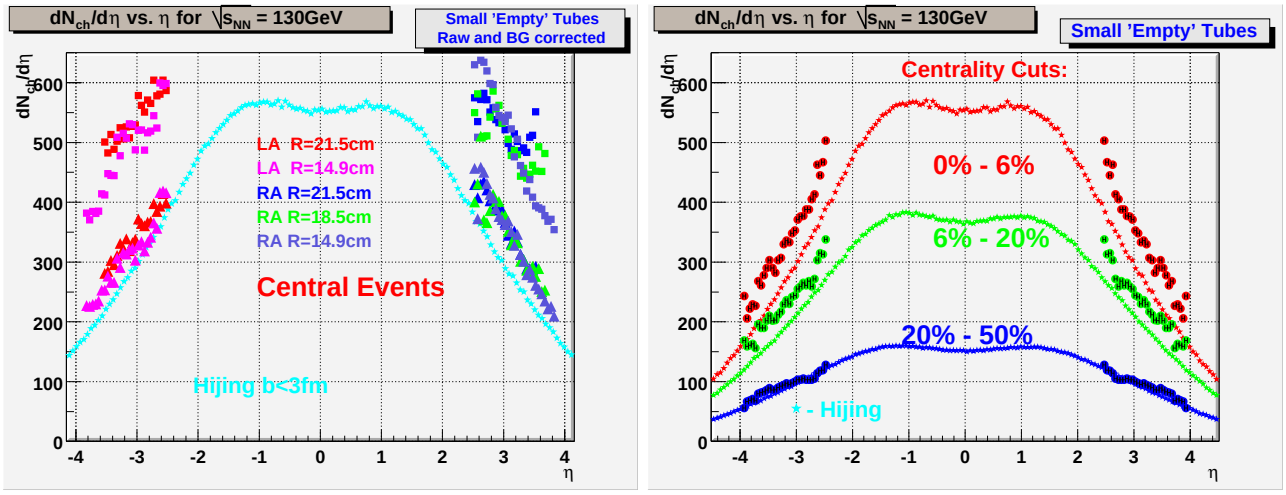

Figure 6: $dN_{ch}/d\eta$ *vs.* η. Small Tubes. "No hits". $|z_o| \leq 150cm$.

5.2 Nonlinearity correction

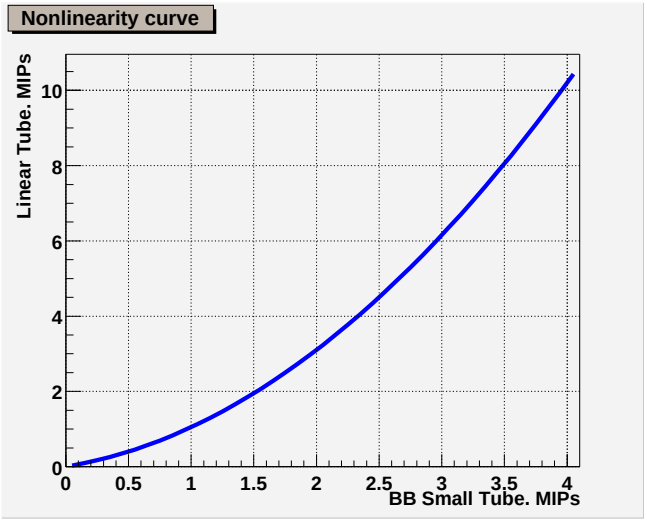

Figure 7: Nonlinearity Function for Small Tubes: $n_{new} = n_{old} \cdot F(n)$

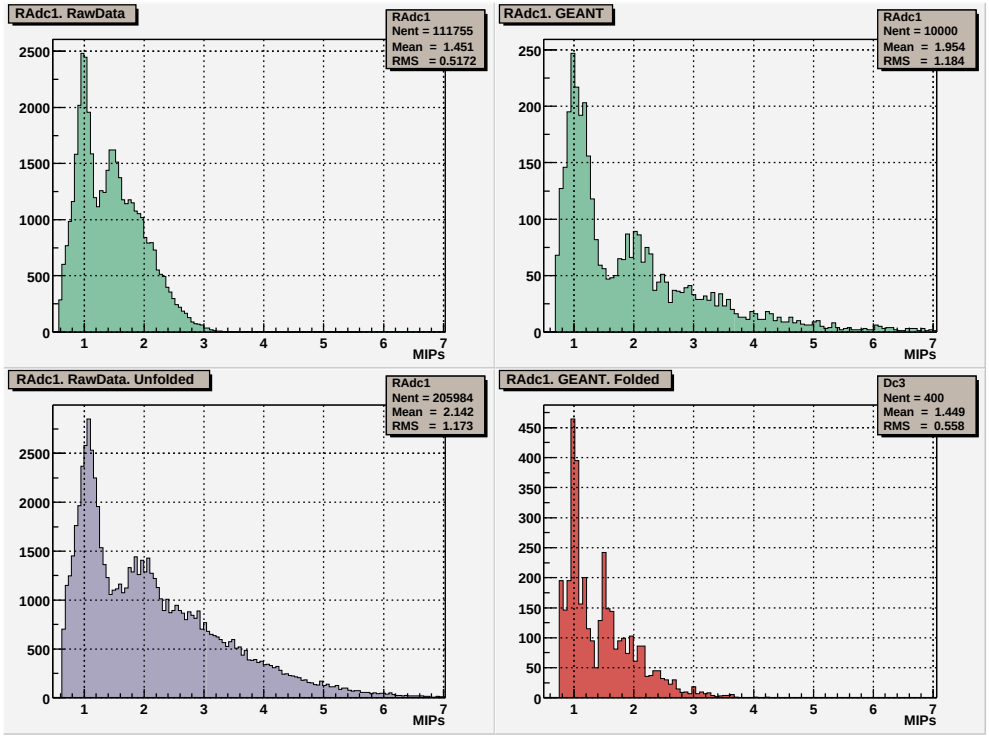

Figure 8: Nonlinearity corrections for Small Tubes.

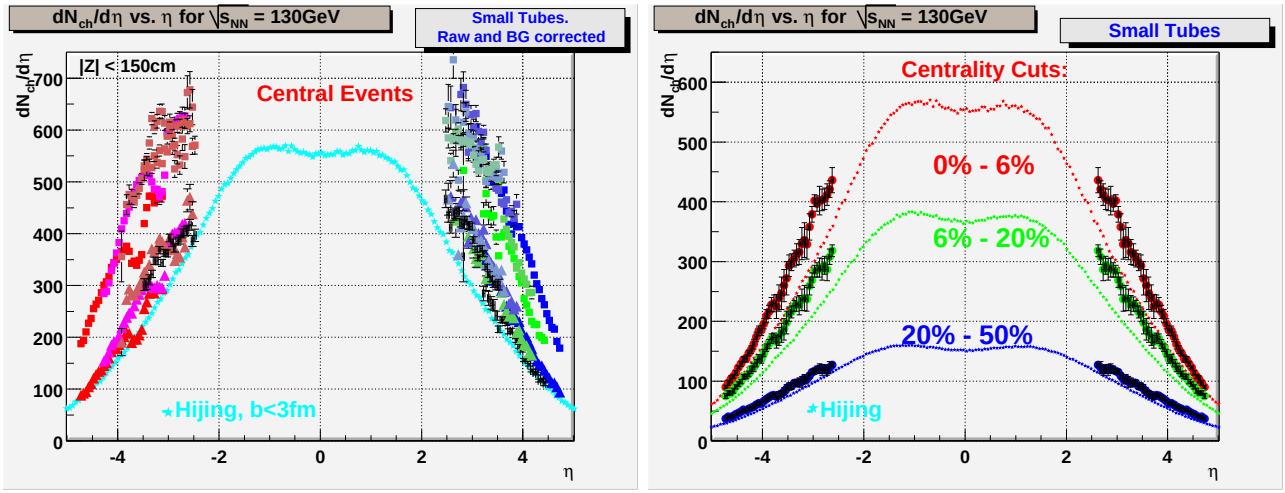

Figure 9: $dN_{ch}/d\eta$ *vs.* η. Small Tubes after the Nonlinearity Correction. $|z_o| \leq 150cm$.

6 Systematic Errors

- **Vertex precision** – $\simeq 1.0\%$
- **Poisson distribution** – $\simeq 1.0\%$
- **Individual differences** – $\simeq 4.9\%$
- Al **thickness** – $\simeq 2.0\%$
- **Centrality definition** – $\simeq 2.0\%$
- δ**-rays** – $\simeq 1.0\%$
- **GEANT**

Total Systematic Error – $\sim 10\%$

7 Final distribution

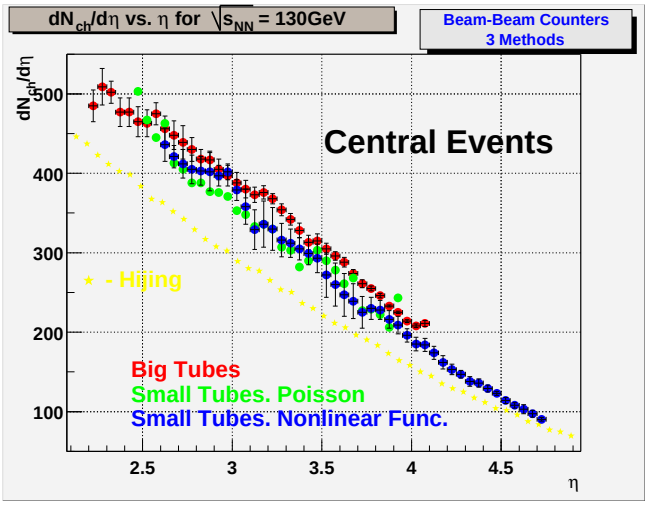

Figure 10: $dN_{ch}/d\eta$ *vs.* η. Methods Comparison. Central Events. $|z_o| \leq 150cm$.

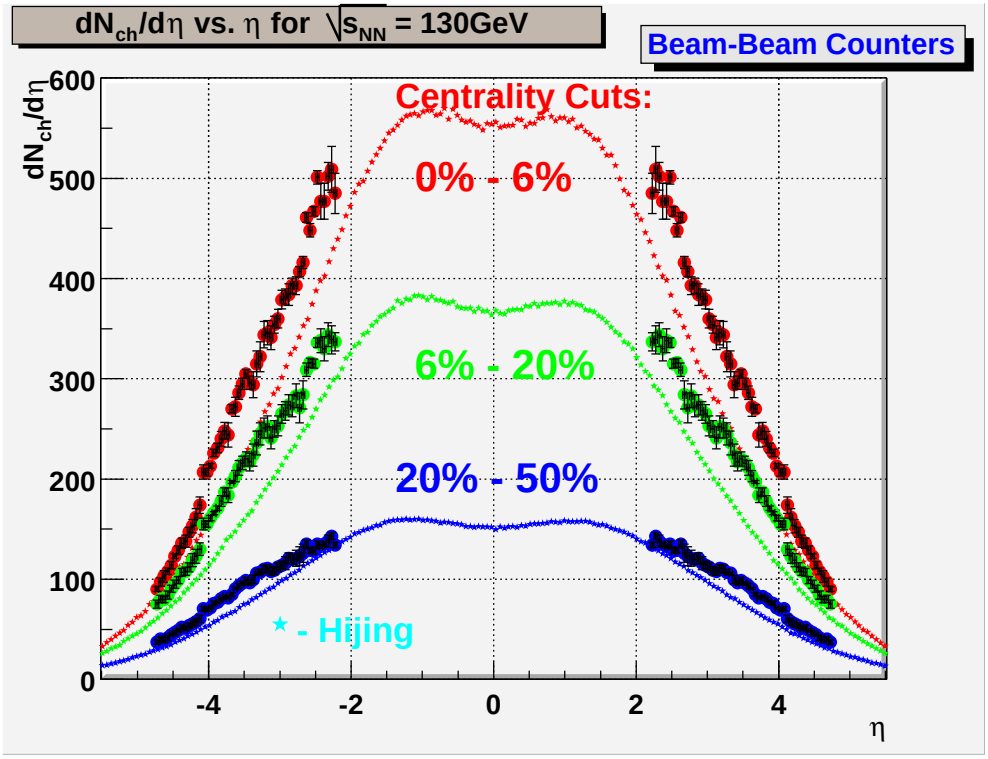

Figure 11: $dN_{ch}/d\eta$ *vs.* η. Beam-Beam Counters. Final Average.